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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,483	01/21/2004	Hiroshi Suzuki	1186.1031	3242
21171	7590	05/10/2005		
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			EXAMINER NAKARANI, DHIRAJLAL S	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/760,483	SUZUKI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	D. S. Nakarani	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-17 and 19-25 is/are rejected.
- 7) ☒ Claim(s) 6 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-5, 7-17 and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yializis (U.S. Patent 6,706,412 B2) in view of Matsuo et al (U.S. Patent 5,645,923), Woolley et al U.S. Patent 5,935,662) and Nagai et al (U.S. Patent 6,106,933).

Yializis teaches barrier film comprising polymeric substrate such as polypropylene, polyethylene terephthalate etc (col. 5, lines 26-35) having surface treated with plasma (claim 8), radiation polymerized acrylic layer on plasma treated surface of the substrate. The exposed surface of the acrylic layer is plasma treated and inorganic barrier layer deposited on the plasma treated surface of the acrylic layer. The inorganic barrier layer can be aluminum oxide or silicon oxide (claim 12). Yializis also teaches radiation cured acrylic layer on the inorganic barrier layer (claim 13). Yializis does not disclose claimed hollow anode plasma treatment, claimed variation of atomic ratio aluminum to oxygen, claimed self-bias value, varying the treatment gas mixture and claimed protective coating.

Matsuo et al teach claimed protective coating on the inorganic barrier layer (claims 1-9).

Woolley et al disclose plasma treating plastic film using hollow anode.

Nagai et al disclose a transparent gas barrier biaxially oriented polypropylene film having a gas barrier layer of an imperfectly oxidized alumina (i.e., aluminum oxide) layer (Abstract). Nagai et al's gas barrier layer has concentration of the aluminum higher in the internal portion of imperfectly oxidized alumina layer than that of in the surface of the layer and that of in the interface with the polyolefin resin layer (col. 2 lines 35-45). Nagai et al's comparative Examples 5 and 6 show that when aluminum content is largest at the interface with substrate or largest in the surface has poor oxygen barrier properties.

Therefore it would have been obvious to a person of ordinary skill in the art at the time of this invention made to utilize disclosures of Matsuo et al, Woolley et al and Nagai et al in the invention of Yializis to utilize Woolley et al's plasma treatment apparatus, Matsuo et al's protective coating and Nagai et al's barrier layer for transparency. Nagai et al also disclose that perfect aluminum oxide layer has insufficient gas barrier properties (col. 1 lines 29-34).

3. Claims 6 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 6 and 18 are allowable because art of record fail to teach lowest aluminum concentration at interface of the substrate surface (i.e., in contact with the substrate) where the atomic ration of aluminum to oxygen is 1:2 and concentration of

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aluminum is higher at surface of the aluminum oxide layer where the atomic ratio of aluminum to oxygen is 1:1.

4. Applicant's arguments filed January 31, 2005 have been fully considered but they are not persuasive. In reference to rejection of claims under 35 USC § 103 as being unpatentable over Yializis in view of Matsuo et al and Woolley et al, applicants mainly argue that the present invention requires vapor deposition layer in contact with the substrate. Yializis disclose radiation polymerized layer between the substrate and the vapor deposited inorganic layer. Thus Yializis does not disclose vapor depositing the inorganic layer directly on the polymer film and none of the references teaches claimed gradient barrier layer of aluminum oxide.

These arguments are unpersuasive because Yializis radiation polymerized layer is also made of polymer. Therefore the substrate as claimed is "consisting essentially of polymer material" reads on Yializis plastic substrate coated with a radiation polymerized polymeric layer since both the substrate and the radiation polymerized layer are polymer material. Yializis discloses vapor deposited inorganic layer directly on polymer material substrate.

The Examiner agrees with applicant that prior art does not teach or suggest gradient aluminum oxide layer as claimed in claim 6 and 18. These claims are allowable.

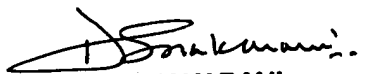
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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. S. Nakarani whose telephone number is (571) 272-1512. The examiner can normally be reached on Tuesday-Friday from 7:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. S. Nakarani/af  
May 5, 2005

  
**D. S. NAKARANI**  
**PRIMARY EXAMINER**